Implementation on Curriculum Management System based on .NET

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Abstract. Curriculum management is an important part of the school teaching management, which is a process inside the school course system for adjusting. In order to achieve the course management of informatization, standardization and systematization, this article is based on .NET framework implementation course management system. Content mainly includes three aspects: first, the data access class design and implementation of data table of the Select, Insert, Update, and Delete operations such as; Second, the business logic class design, to realize the specific processing of business data, including add, modify, and delete information method of the course; Third, the Web form design, realize the interaction with the user, use the Label, TextBox and Button and DropDownList controls. Developers can build system directly and the research results can improve the development efficiency and quality.

Introduction

Course management is in certain social condition, have leadership, systematically coordinator, the relationship between content and curriculum, curriculum construction and the curriculum implementation command, to achieve the intended target. Course management decisions directly effect, promoting teachers' professional level, increasing the extent of curriculum adaptation, rich curriculum theory research. Broadly speaking, the curriculum management is a whole, including the administrative department for education and schools of curriculum development, implementation and evaluation work of the organization and control. Narrow sense in terms of curriculum management refers to curriculum management measures, is inside the school course system for the process of adjusting control. In this paper, the research and development of curriculum management system is aimed at narrow sense, namely school of curriculum establishment, implementation and evaluation.

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The future trend of curriculum management is democratization, standardization, elasticity, socialization and systematization. In order to adapt to the development trend, this article follows the ideas and methods of systems engineering, based on the advanced software development technology, design course management system, formulating curriculum implementation plan, reconstruction of teaching management system, management and development of curriculum resources, improve the curriculum evaluation, and other functions, university administrators, teachers and students to provide a full range of information services.

.NET Framework

.Net is Microsoft's new generation of technology platform, for the application of agile business building connectivity system, the system is based on a standard, connected, adapt to change, the stable and high performance. From the perspective of technology, a.net application is a run on .NET The .Net framework architecture is shown in Fig. 1.

C#	VB	VC++	J#	JScript	Other

CLS: Common Language Specification	CTS: Common Type System

WPF	WCF	WF	CardSpace

ASP.NET (MVC, AJAX, etc)	Windows Forms	Web services

Data and XML Classes (ADO.NET, SQL, XML, XSLT, LINQ, etc)

BCL: Base Class Library (IO, String, Net, Text, Security, Threading, etc)

FCL: Framework Class Library

CLR: Common Language Runtime

Windows APIs	COM+ Service	Drivers

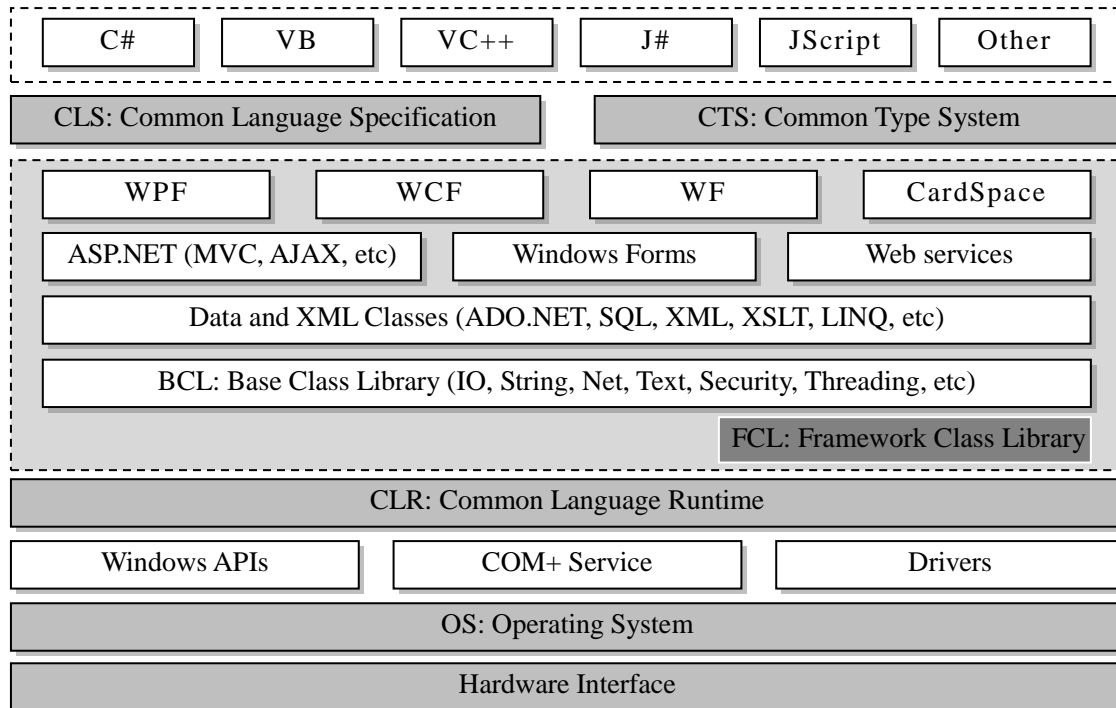**OS: Operating System**

Hardware Interface

Fig. 1. .NET Framework

.Net Framework has two main components: .Net Framework class library and Common language runtime (CLR). .Net Framework class library is made up of classes, interfaces, and value type library, through which the contents of the library can access the system function, is generated. The basis of .Net Framework application, components, and control; Common Language Runtime (CLR) is a Runtime environment, responsible for resource management, and ensure that the necessary separation between the application and the underlying operating System, include Common Language specification (CLS) and Common Type System (CTS).

Design on Data Access Class

Data access classes to complete access to the database, the main implementation of data table of the Select, Insert, Update and Delete operations. Based on ADO.NET design data access class is as follows:

```
Public Function DataAccessUniversalClass (ByVal SQLcmd As String) As String
    Try
        Dim courseConnection as SqlCmd,    courseCommand As SqlCommand
        courseConnection = New SqlConnection(connStr)
        courseConnection.Open()
        courseCommand = New SqlCommand(SQLcmd, courseConnection)
        courseCommand.ExecuteNonquery()
        courseConnection.Close()
        Return "Operation successfully"
    Catch ex As Exception
        Return ex.Message
    End Try
End Function
```

Note:
SQLcmd to call a function from the operating data of SQL statements
ConnStr for the database connection string

ADO.NET (ActiveX Data Object) is to provide the latest Microsoft Data access programming model that is based on Microsoft .NET architecture. ADO.NET includes two core components: a DataSet and .NET data provider, which is a set of including Connection, Command, DataReader, and dataadapters object components. Components to complete the task from the data in the data access operation, simplify the operation. .Net data provider in .Net Framework, the main function is to act as interface between applications and data sources, encapsulating the function of data sources and presented to the user in the form of standard programming interface. ADO.NET objects allow the user to connect to the database, create a database object in the database, and retrieve, edit, insert, and delete data.

Design on Business Logic Class

The business logic layer is a part of the system architecture embodies the core value, is in the data access layer and presentation layer, plays an essential role in data exchange focus mainly concentrated in the business rules and business process implementation related to the business requirements of system design, is related with the response to the domain logic of the system. The business logic layer design support for a scalable architecture is critical, at the same time, the two different roles. For the data access layer is the caller, for the presentation layer are the caller, rely on and be dependent relationships depend on the business logic layer. The business logic layer is associated with specific data processing, in order to "Course comprehensive information table" business logic design, for example, table structure is as follows:

(1) CourseCode, Char, 16	(15) CreditHours, Decimal, 4
(2) CourseName, Varchar, 50	(16) TotalPeriod, Tinyint, 1
(3) CourseTypeName, Varchar, 50	(17) LecturePeriod, Tinyint, 1
(4) CourseTypeCode, Char, 4	(18) ExperimentPeriod, Tinyint, 1
(5) TeachingTypeName, Varchar, 50	(19) StartTeachingSemester, Tinyint, 1
(6) TeachingTypeCode, Char, 2	(20) HoursPerWeek, Tinyint, 1
(7) ExaminationModeName, Varchar, 50	(21) TeachingWeeks, Tinyint, 1
(8) ExaminationModeCode, Char, 1	(22) EnglishTeachingFlag, Tinyint, 1
(9) TeachingCollegeName, Varchar, 50	(23) MultimediaTeaching, Tinyint, 1
(10) TeachingCollegeCode, Char, 3	(24) FlippedClassroomFlag, Tinyint, 1
(11) TrainingTypeName, Varchar, 50	(25) TeachingMaterialName, Varchar, 50
(12) TrainingTypeCode, Char, 1	(26) PublishingCompany, Varchar, 50
(13) ProfessionalName, Varchar, 50	(27) BookNumber, Varchar, 20
(14) ProfessionalCode, Char, 3	(28) CourseDescription, Text

The core of the business logic operation is to add, modify, and delete data table, this paper design the business logic of the corresponding three classes.

(1) AddCourse method for adding Course information, incoming 29 parameters, respectively is the "primary key" and "Course comprehensive information table" corresponds to the information,

the return value to a Boolean type, add records to the logo is successful, the code design is as follows:

```
Public Function AddCourse (ByVal PK As Integer, ByVal inCourseCode As String, _
    ByVal inCourseName As String, ByVal inCourseTypeName As String, ...... ) As Boolean
    Dim InsertCommand As String
    InsertCommand = "Insert into CourseComprehensiveInformationTable " &_
        "(ID, CourseCode, CourseName, CourseTypeName, ......) Values(" &_
        "'" & PK & "','" & inCourseCode "','" & inCourseName & "','" & inCourseTypeName & "'......)"
    Return DataAccessUniversalClass(InsertCommand)
End Function
```

(2) UpdateCourse method, is used to modify Course information, pass into 29 parameters, respectively is the "primary key" and "Course comprehensive information table" corresponds to the information, the return value to a Boolean type, sign if successful, modify records code design is as follows:

```
Public Function UpdateCourse (ByVal PK As Integer, ByVal inCourseCode As String, _
    ByVal inCourseName As String, ByVal inCourseTypeName As String, ...... ) As Boolean
    Dim UpdateCommand As String
    UpdateCommand = "Update CourseComprehensiveInformationTable Set " &_
        "CourseCode ='" & inCourseCode & "', CourseName ='" & inCourseName & "'," & _
        "CourseTypeName ='" &   inCourseTypeName & "' ......   Where ID =" & PK
    Return DataAccessUniversalClass(UpdateCommand)
End Function
```

(3) DeleteCourse method is used to delete records, was introduced into the "primary key" as a condition of removing a parameter, each performs a method to modify a record, the return value to a Boolean type, mark whether delete records success, code design is as follows:

```
Public Function DeleteCourse (ByVal PK As Integer As Boolean
    Dim UpdateCommand As String
    DeleteCommand = "Delete From CourseComprehensiveInformationTable Where ID =" & PK
    Return DataAccessUniversalClass (UpdateCommand)
End Function
```

Design on Web Form

Web form is a server-based technology and all code is running on the server side. Web form for the Web provides object-oriented programming method and the ASP's ease of use and compile the code speed advantage. Client is the user's browser, execution order is: the user requests a Web forms page, the browser sends a request to a Web server, the server call ASP.NET to deal with this page, the output of the page is an HTML stream, is sent to the window.

ASP.NET Web forms page is the ". Aspx "for the extension of text files, can be deployed in the IIS virtual root directory. When a browser requests an ASPX file for the first time, a Web forms page is the CLR compiler. After another user to access this page, the CLR executed directly compiled code, and therefore has higher execution order. Course maintenance page, for example, the design is shown in Fig. 2.

Web page is shown in Fig. 2, 4 kinds of controls used, respectively is: Label control, displayed on the page title and a brief tip; The TextBox control, receiving user input text type data; A Button control, let users to judge the content of the page, when press the Button, the page will respond to user selection, achieve the goal that interact with the user; DropDownList controls, users press the down arrow button in the list controls with a predefined list item, you can choose the required content.

Data validation is a limited user input mechanism, can determine whether the user input data comply with the requirements. To perform validation error input data, it makes more efficient response error information database. And at the same time, it can also to ensure that the input data is valid and not cause garbage data. Framework will handle user input, Web form validation of user input is passed to the related controls and check whether the user input validation control is effective. The current page of all the validation controls after the validation of the work has been completed, IsValid property Settings page, all validation by the IsValid attribute values are true,

False otherwise. Web page is shown in Fig. 2, used three kinds of controls, respectively is: RequiredFieldValidator controls, used to make input controls a choice field, the beginning and end of the input value of Spaces will be removed before validation; RangeValidator control, used to detect if user input values between two values, can be compared on different types of value, such as Numbers, dates, and character; CompareValidator control that is used to input by the user to input control value to the input to the value of other input control or constant value, if the input control is empty, do not call any validation functions, and validation will be successful.

Conclusion

Software realization is the important stage in the process of software engineering, the task is based on the results of software design, write the correct and easy to understand and maintain program module, and debugging the program module and unit test. Programming is also called the program design "refers to a computer program in a programming language, is the key to software implementation, usually by adopting the method of structured programming and object oriented programming. This article is based on .Net implementation, is a kind of object-oriented development methods, data access, business logic and Web forms, constitute the entire content of the system implementation, Web forms to convey the user request to the business logic, business logic class interaction through the data access classes and database system, so as to realize the user to the operation of the database. Developers can build directly on the basis of the design system and can improve the development efficiency and quality.

Fig. 2. Course maintenance page

Acknowledgement

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